ABSTRACT

AIM:

To evaluate the wear of natural tooth against two commercially available zirconia - DentCare zirconia basic and CZAR zirconia.

MATERIALS AND METHODS:

Ten discs of DentCare zirconia basic and ten discs of CZAR zirconia were made using precision milling machine. All the discs were glazed using Ivoclar glazing paste e-max (Ivoclar Vivadent,Liechtenstein, Gemany). Twenty freshly extracted human maxillary premolars were selected and randomly divided into two groups.

Group I – Were made to abrade against DentCare Zirconia

Group II – Were made to abrade against CZAR Zirconia.

Tooth samples for which the wear has to be recorded were placed on the upper member of the two body wear testing machine (Pin on Disk- Ducom, USA) and the zirconia discs were placed on the lower member (rotating wheel). The discs were secured additionally with M-Seal so that the discs are not displaced when the rotating wheel rotates. The cusp tips and zirconia discs were positioned under a constant load of 5kg (49 N). The specimens were made to rub against one another in a rotating cycle to simulate the oral wear cycle. Artificial saliva (*Aqwet Saliva, CIPLA pharma, India*) was sprayed between the tooth sample and zirconia surface at intervals of one minute during testing so as to further simulate the oral condition. The test was run for a total of

10000 cycles on wear machine for each sample. The readings were recorded in DWF file format for the first 5000 cycles and the 2nd 5000 cycles and it was finally combined to get the values at the end of complete 10000 cycles. The highest value of wear was taken into consideration for each sample.

RESULTS:

Results showed that the wear was greater for Group I (DentCare zirconia) when compared to Group II (CZAR zirconia) at the first 5000 cycles and was highly significant. Even though in second 5000 cycles the wear rate reduced compared to first 5000 cycles, it was greater significantly in Group I compared to Group II. The overall wear at the end of 10000 cycles was also highly significant in Group I compared to Group II.

CONCLUSION:

- Within the limitations of this study, it can be concluded that the use of monolithic glazed zirconia discs provides significant yet acceptable opposing tooth wear.
- CZAR zirconia provides less wear and is more wear friendly to the opposing enamel when compared to the DentCare zirconia.
- Usage of glazed zirconia in high stress bearing areas should be carefully analyzed.
- In case of high esthetic region that demands glazed zirconia polishing the surface before glazing could be considered.